

Notice of Allowability

Application No.

09/751,930

Examiner

CHAMELI C. DAS

Applicant(s)

WANG ET AL.

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the RCE filed on 2/11/05.
2. ☒ The allowed claim(s) is/are 31-61 (newly numbered claims are (1-31)).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 12/1/05.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

1. This action is in response to the RCE filed on 2/11/05.
2. Claims 1-30 have been canceled.
3. Claims 31-38, and 41-44 have been amended.
4. Claims 47-61 have been added.
5. Claims 31-61 are allowed.
6. Drawings filed on 12/29/02 have been accepted by the Examiner.

EXAMINER'S AMENDMENT

7. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Andrew DeLizio, applicant's attorney on 12/1/05.

The application has been amended as follows:

(1) *Replace the title as follows.*

EXECUTING PROCESSOR INSTRUCTIONS IN MULTIPLE PIPELINES

(2) *Replace the Abstract as follows:*

Executing processor instructions in multiple pipelines is described herein. In one embodiment a method includes executing, in a first pipeline, a number of processor instructions. The method can also include storing, in a conjugate mapping table, at least one entry that includes a trigger and an associated target related to the execution of the number of processor instructions. The method can also include executing, in a second pipeline, code related to the associated target if the trigger is satisfied during the execution of the number of processor instructions, wherein the second pipeline is to modify one of a number of processor states based on execution of the code.

REASON FOR ALLOWANCE

8. The following is an examiner's statement of reason for allowance:

The cited prior art taken alone or in combination fail to teach, in combination with the other claimed limitations, a system comprising: a processor including a first pipeline and a second pipeline, a second pipeline to execute code relate to an associated target if the trigger is satisfied during execution of the number of processor instructions, the second pipeline to modify one of a number of states of the processor based on execution of the code, as recited in the independent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made or record and not relied upon is considered pertinent to applicant's disclosure.

TITLE: Validating prediction for branches in a cluster via comparison of predicted and condition selected tentative target addresses and validation of branch conditions, US 6304960 B1

TITLE: Recording classification of instructions executed by a computer, US 6954923 B1

TITLE: Instruction flow control for an instruction processor, US 5867699 A

TITLE: Predicated execution of instructions in processors, US 6944853 B2

TITLE: Non-stalling circular counter flow pipeline processor with recorder buffer, US
6691222

TITLE: Data processing system for controlling execution of a debug function and
method therefor, US 6035422 A

TITLE: Method and circuit for initializing a data processing system, US 5704034 A

TITLE: Processor with multiple execution pipelines using pipe stage state information to
control independent movement of instructions between pipe stages of an execution
pipeline, US 6138230 A

TITLE: Execution of a loop instructing in a loop pipeline after detection of a first
occurrence of the loop instruction in an integer pipeline, US 6076159 A.

TITLE: Method for managing an instruction execution pipeline during debugging of a
data processing system, US 6112298 A.

TITLE: Recording classification of instructions executed by a computer, US 6954923 B1

TITLE: Profiling of computer programs executing in virtual memory systems, US
6941545 B1

TITLE: Parallel pipelined instruction processing system for very long instruction word,
US 5333280 A

TITLE: Data processing system with a pipelined structure for editing trace memory
contents and tracing operations during system debugging, US 4879646 A

TITLE: Predicated execution of instructions in processors, US 6944853 B2

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TITLE: Pipeline Behavior Prediction for Superscalar Processors by Abstract

Interpretation, author: Scheider et al, ACM, 1999.

TITLE: On parallel execution of multiple pipelined hash joins, author: Hsiao et al, ACM, 1994.

TITLE: Register Requirements of Pipelined Processors, author: Mangione-Smith et al, ACM, 1992.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chameli Das whose telephone number is 571-272-3696.

The examiner can normally be reached on Monday-Friday from 7:00 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Tuan Dam can be reached at 571-272-3695. The fax number for this group is (571) 273-8300.

An inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is 571-272-2100.

Chameli C. Das
CHAMELI C. DAS
PRIMARY EXAMINER

12/2/05

*Unofficial
Amendment***FAX COVER SHEET**

TO	Examiner Chameli Das
COMPANY	USPTO
FAX NUMBER	15712733696
FROM	Andrew DeLizio
DATE	2005-12-02 21:39:46 GMT
RE	application serial number 09/751,930

COVER MESSAGE

Examiner Das,
I have prepared a new abstract and title for application serial number 09/751,930. Please amend the title as follows.

EXECUTING PROCESSOR INSTRUCTIONS IN MULTIPLE PIPELINES

Please replace the abstract with the following ABSTRACT. Executing processor instructions in multiple pipelines is described herein. In one embodiment a method includes executing, in a first pipeline, a number of processor instructions. The method can also include storing, in a conjugate mapping table, at least one entry that includes a trigger and an associated target related to the execution of the number of processor instructions. The method can also include executing, in a second pipeline, code related to the associated target if the trigger is satisfied during the execution of the number of processor instructions, wherein the second pipeline is to modify one of a number of processor states based on execution of the code.

If you need anything else, please contact me anytime.

Best Regards,

Andrew DeLizio adelizio@slwkolient.com

281-213-8980 (office) 281-754-4914 (fax)

This transmission contains confidential information. The information is intended for use only by the individual or entity named above. If you are not the intended recipient (or the employee or agent responsible for delivering this information to the intended recipient), you are hereby notified that any use of this communication is prohibited. If you have received this information in error, please notify me immediately by telephone at 281-213-8980 or by electronic mail and delete all copies of the transmission. Thank you. Schwegman, Lundberg, Woessner & Kluth, P.A. 1600 TCF Tower, 121 South Eighth Street, Minneapolis, MN 55402 Telephone: (612) 373-6900 Fax: (612) 339-3061